WHAT IS CLAIMED IS:

1. A method of predicting a life of a rolling bearing having a specification which a basic dynamic load rating C and a basic static load rating C_0 are calculable,

wherein, when a dynamic equivalent load is P, a load index is p, a viscosity ratio of a lubricant is κ, a contamination degree coefficient is a_c, a fatigue limit load is Pu, and a life correction coefficient is a_{NSK}, a corrected rating life L_A of the rolling bearing at a certain reliability coefficient a_1 is calculated by:

$$L_A = a_1 \bullet a_{NSK} \bullet (C/P)^p$$

$$a_{NSK} \propto f[F(\kappa), \{(P - Pu)/C\} \bullet 1/a_c].$$

2. The method according to claim 1, wherein a material coefficient a_m is applied to the contamination degree coefficient a_c as a degree of influence of steel at which the life is prolonged by a component of the steel and a heat treatment, and the contamination degree coefficient a_c is calculated by:

$$a_c = g(a_m, a_c).$$

3. The method according to claim 1, wherein a function $F(\kappa)$ of the viscosity ratio κ is set as a lubrication parameter a_L, and

wherein the life correction coefficient a_{NSK} is

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calculated on the basis of the lubrication parameter a_L

and a load parameter $\{(P - Pu)/C\} \bullet 1/a_c$.

4.   An apparatus for predicting a life of a rolling

bearing having a specification which a basic dynamic load

rating C and a basic static load rating C_0 are calculable,

comprising:

a data information inputting means for inputting

data information including the basic dynamic load rating

C and the basic static load rating C_0 of said rolling

bearing;

a dynamic equivalent load calculating means for

calculating a dynamic equivalent load on the basis of the

data information input by said data information inputting

means;

a reliability setting means for setting a

reliability coefficient;

a lubrication parameter calculating means for

calculating a lubrication parameter on the basis of the

inputting data information;

a contamination degree setting means for setting a

contamination degree;

a fatigue limit load calculating means for

calculating a fatigue limit load;

a load parameter determining means for determining a

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load parameter on the basis of the basic dynamic load, the dynamic equivalent load, the fatigue limit load, and the contamination degree coefficient;

a life correction coefficient setting means for setting a life correction coefficient on the basis of the lubrication parameter and the load parameter; and

a bearing life calculating means for calculating the life of the bearing on the basis of the reliability coefficient, the life correction coefficient, the basic dynamic load rating, the dynamic equivalent load, and a load index.

5.   The apparatus according to claim 4, wherein said contamination degree setting means sets a contamination degree coefficient in view of a material coefficient as a degree of influence of steel at which the life is prolonged by a component of the steel and a heat treatment.

6.   The apparatus according to claim 5, wherein said life correction coefficient setting means calculates the life correction coefficient on the basis of the load parameter and the lubrication parameter and with reference to a life correction coefficient calculation map which indicates relationships among values of the

parameters and the life correction coefficient with using
the lubrication parameter as a parameter.

7.   The apparatus according to claim 4, wherein
said lubrication parameter calculating means calculates a
viscosity ratio κ which is a ratio of a kinematic
viscosity ν of a used lubricant at an operating
temperature to a required viscosity ν_1 at the operating
temperature, from an operating kinematic viscosity ν of
the used lubricant, a mean diameter dm of said bearing,
and a rotation number N of said bearing.

8.   The apparatus according to claim 7, wherein
said life correction coefficient setting means calculates
the life correction coefficient on the basis of the load
parameter and the lubrication parameter and with
reference to a life correction coefficient calculation
map which indicates relationships among values of the
parameters and the life correction coefficient with using
the lubrication parameter as a parameter.

9.   The apparatus according to claim 4, wherein
said life correction coefficient setting means calculates
the life correction coefficient on the basis of the load
parameter and the lubrication parameter and with

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reference to a life correction coefficient calculation
map which indicates relationships among values of the
parameters and the life correction coefficient with using
the lubrication parameter as a parameter.

10. The apparatus according to claim 4, further
comprising:

an exhibiting means for exhibiting the life of the
bearing which is calculated by said bearing life
calculating means.

11. An apparatus for predicting a life of a rolling
bearing having a specification which a basic dynamic load
rating C and a basic static load rating C_0 are calculable,
comprising:

a data information inputting means for inputting
data information including the basic dynamic load rating
C and the basic static load rating C_0 of said rolling
bearing;

a dynamic equivalent load calculating means for
calculating a dynamic equivalent load on the basis of the
data information input by said data information inputting
means;

a reliability setting means for setting a
reliability coefficient;

a lubrication parameter calculating means for calculating a lubrication parameter on the basis of the inputting data information;

a contamination degree setting means for setting a contamination degree;

a fatigue limit load calculating means for calculating a fatigue limit load;

a load parameter determining means for determining a load parameter on the basis of the basic dynamic load, the dynamic equivalent load, the fatigue limit load, and the contamination degree coefficient;

a life correction coefficient setting means for setting a life correction coefficient on the basis of the lubrication parameter and the load parameter;

a bearing life calculating means for calculating the life of the bearing on the basis of the reliability coefficient, the life correction coefficient, the basic dynamic load rating, the dynamic equivalent load, and a load index; and

a recalculation judging means for judging whether, when a calculation result of said bearing life calculating means fails to coincide with a desired life, a recalculation for making the calculation result coincident with the desired life is required or not.

12.   The apparatus according to claim 11, wherein

said contamination degree setting means sets a

contamination degree coefficient in view of a material

coefficient serving as a degree of influence of steel at

5   which the life is prolonged by a component of the steel

and a heat treatment.

13.   The apparatus according to claim 12, wherein

said life correction coefficient setting means calculates

10   the life correction coefficient on the basis of the load

parameter and the lubrication parameter and with

reference to a life correction coefficient calculation

map which indicates relationships among values of the

parameters and the life correction coefficient with using

15   the lubrication parameter as a parameter.

14.   The apparatus according to claim 11, wherein

said lubrication parameter calculating means calculates a

viscosity ratio κ which is a ratio of a kinematic

20   viscosity ν of a used lubricant at an operating

temperature to a required viscosity ν_1 at the operating

temperature, from an operating kinematic viscosity ν of

the used lubricant, a mean diameter dm of said bearing,

and a rotation number N of said bearing.

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15. The apparatus according to claim 14, wherein said life correction coefficient setting means calculates the life correction coefficient on the basis of the load parameter and the lubrication parameter and with reference to a life correction coefficient calculation map which indicates relationships among values of the parameters and the life correction coefficient with using the lubrication parameter as a parameter.

16. The apparatus according to claim 11, wherein said life correction coefficient setting means calculates the life correction coefficient on the basis of the load parameter and the lubrication parameter and with reference to a life correction coefficient calculation map which indicates relationships among values of the parameters and the life correction coefficient with using the lubrication parameter as a parameter.

17. The apparatus according to claim 11, further comprising:

an exhibiting means for exhibiting the life of the bearing which is calculated by said bearing life calculating means.

25   18. A rolling bearing selection apparatus using an

apparatus for predicting a life of a rolling bearing, comprising:

a bearing kind inputting means for inputting a bearing kind which is desired by a user;

5   a data information inputting means for inputting necessary data information other than required data information required by the user, from necessary data information including the basic dynamic load rating C and the basic static load rating C_0 of said rolling bearing;

10   a data information assuming means for comparing the required data information which is input by said data information inputting means with said necessary data information, and assuming data information which is not input;

15   said life predicting apparatus for predicting a life of a rolling bearing according to claim 4, which performs calculation of predicting the bearing life on the basis of the data information which is input by said data information inputting means and the data information

20   which is assumed by said data information assuming means;

a judging means for judging whether a calculation result of said life predicting apparatus satisfies the data information which is input by said data information inputting means or not;

25   a data information exhibiting means for, when a

judgement result of said judging means indicates that the

calculation result satisfies the data information,

exhibiting the data information which is set by said data

information assuming means; and

5   a recalculating means for, when the judgement result

of said judging means indicates that the calculation

result does not satisfy the data information, changing

the data information which is assumed by said data

information assuming means, and causing said life

10 predicting apparatus to again perform the calculation.

19.   The rolling bearing selection apparatus

according to claim 18, wherein at least one of said data

information inputting means, said data information

15 assuming means, said life predicting apparatus, said

judging means, said data information exhibiting means,

and said recalculating means is accessible through an

Internet.

20   20.   The rolling bearing selection apparatus

according to claim 19, further comprising:

a user registration accepting means for accepting

user registration through the Internet,

wherein only a user who is registered in said user

25 registration accepting means is allowed to access at

least one of said data information inputting means, said

data information assuming means, said life predicting

apparatus, said judging means, said data information

exhibiting means, and said recalculating means, through

5   the Internet.

21.   The rolling bearing selection apparatus

according to claim 19, wherein a language which is

handled in said data information inputting means, said

10   data information assuming means, said apparatus for

predicting a life of a rolling bearing, said judging

means, said data information exhibiting means, and said

recalculating means is selectable.

22.   The rolling bearing selection apparatus

15   according to claim 18, wherein said data information

exhibiting means performs at least one of exhibition of

prediction of the life of the rolling bearing, exhibition

of an optimum bearing, and exhibition of optimum service

20   condition.

23.   The rolling bearing selection apparatus

according to claim 18, wherein said data information

exhibiting means exhibits at least one of prediction of

25   the life of the rolling bearing, an optimum bearing, and

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optimum service condition, as image information in which a parameter is changeable.

24. The rolling bearing selection apparatus according to claim 23, wherein the image information is displayed as a characteristic diagram in which one axis indicates a predicted value of the life, and another axis indicates one selected from a bearing size, a bearing load, a rotation speed, a kind of a lubricant, a degree of contamination, a service temperature, a material kind, and a reliability coefficient.

25. The rolling bearing selection apparatus according to claim 18, further comprising:

a delivery information exhibiting means for exhibiting at least one of a delivery time and an estimated amount of the rolling bearing based on the data information exhibited by said data information exhibiting means.

26. A storage medium storing a life prediction program for predicting a life of a rolling bearing having a specification which a basic dynamic load rating C and a basic static load rating C_0 are calculable, said program executing the steps of:

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dynamic load rating C and the basic static load rating C_0 of said rolling bearing;

calculating a dynamic equivalent load on the basis of the data information which is input in said data information inputting step;

setting a reliability coefficient;

calculating a lubrication parameter on the basis of the data information;

setting a contamination degree;

calculating a fatigue limit load;

determining a load parameter on the basis of the basic dynamic load, the dynamic equivalent load, the fatigue limit load, and the contamination degree;

setting a life correction coefficient on the basis of the lubrication parameter and the load parameter; and

calculating the life of the bearing on the basis of the reliability coefficient, the life correction coefficient, the basic dynamic load rating, the dynamic equivalent load, and a load index.

27. A storage medium storing a life prediction program for predicting a life of a rolling bearing having a specification which a basic dynamic load rating C and a basic static load rating C_0 are calculable, said program executing the steps of:

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inputting data information including the basic

dynamic load rating C and the basic static load rating C_0

of said rolling bearing;

calculating a dynamic equivalent load on the basis

5   of the data information which is input in said data

information inputting step;

setting a reliability coefficient;

calculating a lubrication parameter on the basis of

the data information;

10   setting a contamination degree;

calculating a fatigue limit load;

determining a load parameter on the basis of the

basic dynamic load, the dynamic equivalent load, the

fatigue limit load, and the contamination degree;

15   setting a life correction coefficient on the basis

of the lubrication parameter and the load parameter;

calculating the life of the bearing on the basis of

the reliability coefficient, the life correction

coefficient, the basic dynamic load rating, the dynamic

20   equivalent load, and a load index; and

judging whether, when a calculation result of said

bearing life fails to coincide with a desired life, a

recalculation for making the calculation result

coincident with the desired life is required or not.

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28.   A storage medium storing a bearing selection
program for selecting a rolling bearing according to a
specification required by a user, said program executing
the steps of:

5   inputting a bearing kind which is desired by the
user;

    inputting necessary data information other than
required data information required by the user, from
necessary data information including the basic dynamic
10   load rating C and the basic static load rating C_0 of said
rolling bearing;

    comparing the required data information with the
necessary data information to assume data information
which is not input;

15   predicting a life by using the life prediction
program according to claim 26, on the basis of the
required data information and assumed data information
other than the required data information;

    judging whether a result of the life prediction
20   satisfies the required data information or not;

    exhibiting the assumed data information as bearing
selection information, when the life prediction result
satisfies the required data information; and,

    changing the assumed data information, and causing
25   said life prediction program to again perform the

calculation, when the life prediction result does not

satisfy the required data information.